

## ANTILOCK BRAKING SYSTEMS: TRAFFIC SAFETY TIPS

### What is ABS?

An antilock braking system (ABS) automatically controls braking pressure to prevent the wheels from locking during braking.

### Why Are Antilock Braking Systems Beneficial?

Motorists, confronted with emergency situations, often press too hard on the brake pedal, causing the vehicle's wheels to lock, which causes skidding and loss of control. ABS prevents wheel lockup, allowing drivers to maintain control of their vehicles even in *panic stop* situations. Most

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antilock systems also enable the vehicle to stop in a shorter dis-

tance, particularly on wet or slippery road surfaces.

### How Do They Work?

Wheel speed sensors detect wheel lock, and send signals to cause brake pressure. The ABS then reapplies braking pressure to maintain maximum braking. ABS, in effect, pumps the brakes like a driver would, only much faster. During ABS operation, drivers should expect to feel the brake pedal pulsating, and should continue applying pedal pressure as required.

Current antilock systems can release and reapply the brakes as many as 15 times per second. By allowing the wheels to continue rolling, the driver is always able to maintain control and stop the vehicle on slippery surfaces in a shorter distance than would be possible otherwise.

## GETTING USED TO ABS

When driving at high speeds, motorists are accustomed to hearing a screeching noise when someone brakes suddenly. This happens when a wheel locks up and the tire skids on the road surface. Since antilock brakes prevent wheel lockup, there is no screeching sound. The absence of a screech means the ABS is working.

Motorists also are accustomed to pumping their brakes to prevent wheel lockup. When the pedal is pushed on a car equipped with antilock brakes, some motorists notice a pulsing sensation. The antilock brakes are doing their own "pumping." Do not pump the pedal. If you do, you will defeat the purpose of the ABS or reduce the effectiveness of the brakes.

### What Are The Major Components Of ABS?

The typical antilock system includes the following major components:

**Wheel speed sensors** measure wheel speed, and then transmit this information to an electronic control unit.

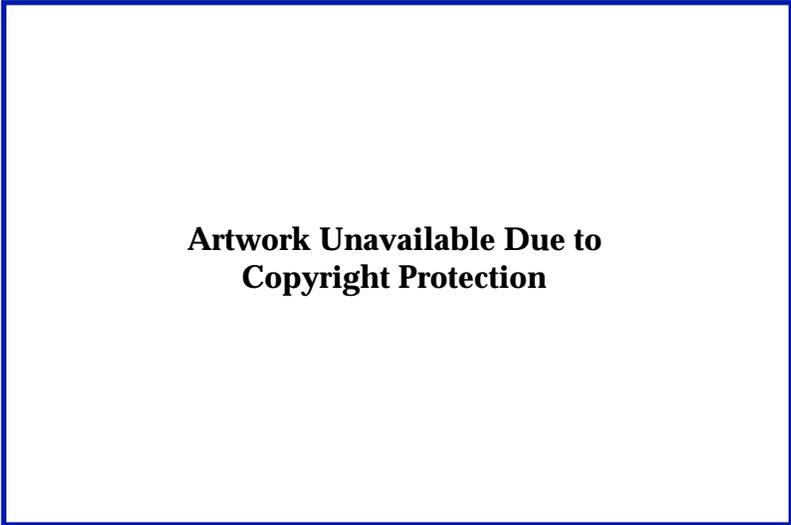
The **electronic control unit** receives information from the sensors, determines when a wheel

is about to lock up, and activates the brake pressure modulator. Also, it detects any malfunction of the ABS.

The **brake pressure modulator** reduces, holds, and restores pressure to one or more brakes, independent of the driver's brake pedal effort.

Some antilock systems control only the two rear wheels and others control all four wheels of the vehicle. In general, the four-wheel systems provide better stability and control during braking, but are more expensive.

In the event of a malfunction in the antilock system, a warning lamp on the instrument panel alerts the driver that the ABS is in need of repair. But the vehicle's normal brakes will still function. ■



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▲ *Figure 1. Overhead view of an ABS system. Reprinted with permission from PT-29, © 1987, Society of Automotive Engineers, Inc.*

## IF YOU THINK YOUR VEHICLE HAS A SAFETY PROBLEM, WE WANT TO HEAR FROM YOU

### AUTO SAFETY HOTLINE (800) 424-9393

If you think that your vehicle has a safety problem, you can assist the National Highway Traffic Safety Administration (NHTSA) by completing and mailing back the Vehicle Owner's Questionnaire (VOQ) included with this fact sheet, or calling the Auto Safety Hotline.

The toll-free Hotline number, (800) 424-9393, can be reached from anywhere in the United States. If you are calling from the Washington, D.C. metropolitan area, the number is (202) 366-0123. A Spanish-speaking operator is available weekdays from 8 a.m. to 4 p.m., Eastern time. The Hotline is available to the hearing impaired through a teleprinter

(TTY) number, (800) 424-9153. In the Washington, D.C. area the TTY number is (202) 366-7800.

If it is determined that a safety defect exists, the manufacturer has to fix the problem at no cost to the owner.

If there are any documents relevant to your case, including copies of repair bills and letters to the manufacturer, attach them to your completed VOQ.

If you are not sure of any information requested in the VOQ, leave the box blank. But we must have the Vehicle Identification Number (VIN) to process your questionnaire. The VIN is a 17-

digit number that can be seen through the front windshield on the driver's side of the dashboard. When reporting a tire problem, the DOT identification (located on the sidewall) is needed.

The VOQ asks if you authorize NHTSA to provide a copy of your report to the manufacturer. If so, check YES on the VOQ and sign and date it. When we send the report to the manufacturer, it often results in a satisfactory solution of individual problems. But NHTSA cannot order corrective action unless the vehicle or item of equipment is determined to have a defect and a safety recall campaign is conducted.



U.S. Department of Transportation  
National Highway Traffic Safety Administration

Auto Safety Hotline

# Vehicle Owner's Questionnaire

NATIONWIDE 1-800-424-9393  
DC METRO AREA (202) 366-0123

## FOR AGENCY USE ONLY

Date Received

Od-or \_\_\_\_  
rt-dt \_\_\_\_  
od-rt \_\_\_\_  
up-ltr \_\_\_\_

Reference No.

### OWNER INFORMATION (Type or Print)

Name \_\_\_\_\_  
Street No. \_\_\_\_\_ Apt. No. \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

Day Time Telephone Number  
( )

Do you authorize NHTSA to provide a copy of this report to the manufacturer of your vehicle?  YES  NO  
In the absence of an authorization, NHTSA WILL NOT provide your name and address to the vehicle manufacturer.

Signature of Owner \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_

### VEHICLE INFORMATION

Vehicle Ident. No. (VIN.) <small>(Located at bottom of windshield on driver's side)</small>	Vehicle Make	Vehicle Model	Vehicle Year	Current Odometer Reading

Purchase Date	Dealer's Name _____	Engine Size (CID/CC/L) _____	<input type="checkbox"/> Turbo
<input type="checkbox"/> New <input type="checkbox"/> Used	City _____ State _____ Zip Code _____	No. Cylinders _____	<input type="checkbox"/> Diesel
			<input type="checkbox"/> Gas
			<input type="checkbox"/> Fuel Injection

Transmission Type	Antilock Brakes	Restraint System	Cruise Control	Drivetrain	Body Style
<input type="checkbox"/> Manual <input type="checkbox"/> Automatic	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Driverside Airbag <input type="checkbox"/> Passengerside Airbag <input type="checkbox"/> 3-Point Belt	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Front <input type="checkbox"/> Rear <input type="checkbox"/> 4-Wheel	<input type="checkbox"/> Hatch Back <input type="checkbox"/> Van <input type="checkbox"/> Stawag <input type="checkbox"/> 4-Door <input type="checkbox"/> 2-Door <input type="checkbox"/> Pick Up Truck <input type="checkbox"/> Other _____

### FAILED COMPONENT(S)/PART(S) INFORMATION

Component	Part Name(s)	Location	Failed Part(s)
		<input type="checkbox"/> Left <input type="checkbox"/> Front <input type="checkbox"/> Right <input type="checkbox"/> Rear	<input type="checkbox"/> Original <input type="checkbox"/> Replacement
No. of Failures	Date(s) of Failure(s) _____ Mileage at Failure(s) _____ Vehicle Speed at Failure(s) _____	Manufacturer Contacted? <input type="checkbox"/> Yes <input type="checkbox"/> No	NHTSA Previously Contacted? <input type="checkbox"/> Yes <input type="checkbox"/> No

### APPLICABLE ACCIDENT INFORMATION

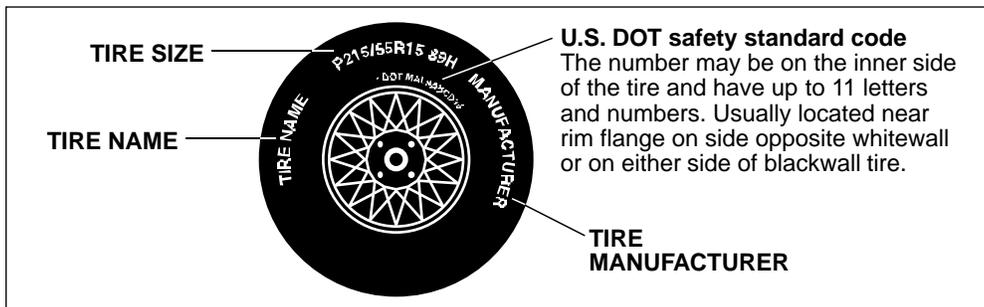
*(Use reverse side for more detailed information)*

Accident <input type="checkbox"/> Yes <input type="checkbox"/> No	Fire <input type="checkbox"/> Yes <input type="checkbox"/> No	Number Persons Injured	Number of Fatalities	Estimated Property Damage \$ _____	Reported to Police <input type="checkbox"/> Yes <input type="checkbox"/> No
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### INFORMATION ON TIRE FAILURE(S) (IF APPLICABLE)

To report defective or failed tires provide the following: DOT Number, Tire Manufacturer, Tire Name, Tire Size (include all numbers and letters).  
**Note: This information not required for normal operation tires.**

D	O	T								Manufacturer	Tire Name	Size
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**The Privacy Act of 1974—Public Law 93-579** This information is requested pursuant to authority vested in the National Highway Traffic Safety Act and subsequent amendments. You are under no obligation to respond to this questionnaire. Your response may be used to assist the NHTSA in determining whether a manufacturer should take appropriate action to correct a safety defect. If the NHTSA proceeds with administrative enforcement or litigation against a manufacturer, your response, or a statistical summary thereof, may be used in support of the agency's action.

